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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/255,892	02/23/1999	CHARLES EDWARD BOICE	EN998082	9132

7590 06/29/2004

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ART UNIT	PAPER NUMBER
2613	25

DATE MAILED: 06/29/2004

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Paper No. 25

Application Number: 09/255,892
Filing Date: 2/23/1999
Appellant(s): Boice et al.

Kevin Radigan
For Appellant

MAILED
JUN 2 9 2004
Technology Center 2600

EXAMINER'S ANSWER

This is in response to Appellants' brief on appeal filed on 5/6/04 as Paper 24.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement is present identifying that there are no related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The appellants' statement in the brief that claims 1-28 do not stand or fall together is agreeable with by the Examiner.

(8) Claims Appealed

The copy of the appealed claims contained in the appendix to the brief is correct.

(9) Prior art of record

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

Wheeler et al (5,825,680)	10/20/1998
Hang et al (5,710,595)	1/20/1998
Riek et al (5,987,179)	11/16/1999
Hosono (5,796,438)	8/18/1998

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

A. Claims 1-4, 10-12, 18-20, 23-25, and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Wheeler et al (5,825,680).

Regarding claim 29, Wheeler et al discloses a computer product (Fig. 1) comprising a medium having program means for use in encoding a sequence of video data comprising:

computer program means (CPU) for storing within a quantizer multiple sets of quantization matrix tables (Col. 13, lines 28-32) at the same time, comprising separate, independent sets of quantization (Q) matrix tables comprising at least one intra matrix table and at least one non-intra matrix table (690);

computer program means for quantizing video data in a single pass using at least one set of quantization (Q) matrix tables of the multiple sets of Q matrix tables (Fig. 7, 644); and

computer program means for dynamically switching in real time (col. 5, lines 25-27) the quantizing during the single pass from using one set of the Q tables to using another set of Q matrix tables of the multiple sets of Q matrix tables, wherein the dynamically switching occurs without requiring stopping of the encoding process (col. 13, Lines 28-32); and

computer program code means for allowing updating of the one set of quantization matrix tables of the multiple sets of Q matrix tables within the quantizer while the another set of quantization matrix tables is in use by the quantizer (col. 9, lines 25-36).

Regarding claims 1 and 18, Wheeler et al discloses an encoder comprising:

storage within a quantizer for holding multiple sets of quantization matrix tables (Fig. 7, 690) at the same time, comprising separate, independent sets of quantization (Q) matrix tables (Intra Table; Non-Intra (inter) Table));

a quantizer (644) for quantizing video data in a single pass using at least one set of Q matrix tables of the multiple sets of Q matrix tables;

means for dynamically switching in real time (col. 5, lines 25-27) the quantizer during the single pass quantizing from using one set of the Q tables to using another set of Q matrix tables of the multiple sets of Q matrix tables, wherein the dynamically switching occurs without requiring stopping of the encoding process (col. 13, lines 28-32); and

means for allowing updating of the one set of quantization matrix tables of the multiple sets of Q matrix tables within the quantizer while the another set of quantization matrix tables is in use by the quantizer (col. 9, lines 25-36).

Regarding claims 2 and 19, Wheeler et al discloses switching the quantizer from using one set of the Q tables to using another set of Q matrix tables of the multiple sets of Q matrix tables at a picture boundary of the sequence of video data (col. 13, lines 28-32).

Regarding claims 3, 12, 20, and 25, Wheeler et al discloses dynamically switching one set of Q matrix tables to another set of Q matrix tables without delaying encoding of video data or dynamically (real time) changing Q matrix tables (col. 13, lines 28-32).

Regarding claim 4, Wheeler et al discloses the use of conventional table set register (692) to control switching of the quantizer.

Regarding claims 10-11 and 23-24, Wheeler et al discloses quantization matrix tables comprising an intra luminance table, a non-intra luminance table, an intra chrominance table, and a non-intra chrominance table (Fig. 7, 690; col. 8, lines 16-24).

B. Claims (5-6, 9), and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wheeler et al as applied to claims 1 and 18 above, respectively, and further in view of Hang et al (5,710,595).

Regarding claims 5-6, 9, and 21, Wheeler et al does not specifically disclose having a default quantization matrix table.

However, Hang et al teaches utilizing a default quantization matrix table (abs.).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing an encoder as taught by Wheeler et al to incorporate Hang et al's teaching so that at least one table or multiple tables of the set of Q matrix tables comprise default quantization matrix tables pursuant to MPEG standard to insure the conventional level of image quality.

C. Claims 7-8 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wheeler et al as applied to claims 1 and 18 above, respectively, and further in view of Riek et al (5,987,179).

Regarding claims 7-8 and 22, Wheeler et al does not particularly disclose Q tables comprising user's custom quantization matrix tables.

However, Riek et al discloses utilizing custom quantization matrix tables (Col. 5, lines 36-38) to insure the desired level of image quality.

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing an encoder as taught by Wheeler et al to incorporate a conventional custom quantization matrix tables as taught by Riek et al so that at least one table or multiple tables of the set of Q matrix tables comprise custom quantization matrix tables to insure the desired level of image quality.

D. Claims 13-17 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wheeler et al as applied to claims 1 and 18 above, respectively, and further in view of Hosono (5,796,438).

Regarding claims 13 and 26, Wheeler et al does not particularly disclose a compressed store interface for outputting a compressed bitstream for dynamically outputting a Q matrix extension start code in the compressed bitstream.

However, Hosono discloses a compressed store interface for outputting a compressed bitstream for dynamically outputting a Q matrix extension start code in a compressed bitstream (Col. 10, lines 1-38) in order to access multiple sets of Q matrix tables.

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing an encoder as taught by Wheeler et al to incorporate a teaching of compressed store interface for outputting a compressed bitstream for dynamically outputting a Q matrix extension start code as taught by Hosono in order to access multiple sets of Q matrix tables.

Regarding claims 14, The Examiner takes official notice that it is considered an obvious feature for the compressed store interface to have a storage in order to hold the multiple sets of Q matrix tables.

Regarding claims 15-17 and 27-28, Wheeler et al discloses that during encode and decode, the CPU loads the tables as required and CPU being responsible for updating Q tables on video stream context switches (Col. 13, lines 30-31), which clearly anticipates switching one set of Q matrix tables to another set of Q matrix tables without delaying or pausing encoding of video data or dynamically (real time) changing Q matrix tables or while quantizing the sequence of video data.

(11) Response to Argument

Appellants' arguments filed on 5/6/04 in the brief of Paper 24 have been fully considered but they are not persuasive. The Appellants present arguments contending the Examiner's rejections of:

claims 1-4, 10-12, 18-20, 23-25, and 29 being rejected under 35 U.S.C. 102(e) as being anticipated by Wheeler et al;

claims (5-6, 9), and 21 under 35 U.S.C. 103(a) as being unpatentable over Wheeler et al as applied to claims 1 and 18 above, respectively, and further in view of Hang et al;

claims 7-8 and 22 under 35 U.S.C. 103(a) as being unpatentable over Wheeler et al as applied to claims 1 and 18 above, respectively, and further in view of Riek et al; and

claims 13-17 and 26-28 under 35 U.S.C. 103(a) as being unpatentable over Wheeler et al as applied to claims 1 and 18 above, respectively, and further in view of Hosono as stated in the Grounds of Rejection.

However, after careful consideration of the arguments presented, the Examiner must respectively disagree for the reasons that follow and submit to the board that the rejection be sustained.

AA) The Appellants present a first argument that the Wheeler et al's reference does not discuss switching between complete sets of tables, and updating one set of Q (quantization) matrix tables of the multiple sets of Q matrix tables within the quantizer while another set of Q matrix tables is in use by the quantizer (Appellants: page 9).

However, after careful scrutiny of the Wheeler et al reference, the Examiner must respectively disagree, and maintain the grounds of rejection for the reasons that follow.

In response, as previously discussed before, even though Wheeler et al's Fig. 7, element 690, appears to be a single Q table, Wheeler et al discloses that the **Q tables** are stored in Q table rams 690, and CPU loads the tables as

required, and the CPU updates Q tables on video stream context switches (col. 13, lines 28-32), which meets the claimed limitations of switching between complete sets of tables and updating one set of Q matrix tables of the multiple sets of Q matrix tables within the quantizer while another set of Q matrix tables is in use by the quantizer. In other words, the CPU updates a set of Q tables and switches a set of Q tables from the multiple sets of loaded Q matrix tables.

Note: the Appellants' discussion regarding MQUANT values (Appellants: page 9) is deemed moot in view of the above response.

Therefore, Wheeler et al indeed discloses updating one set of Q matrix tables of the multiple sets of Q matrix tables within the quantizer while another set of Q matrix tables is in use by the quantizer as discussed above.

For the above reasons, the Wheeler et al's reference does render claims 1, 18, and 29 as being anticipated under 35 U.S.C. 102(e).

BB) The Appellants present another argument traversing dependent claim 4, which recites "dynamically switching ... a table set register within the quantizer adapted to control switching of the quantizer from the one set of Q matrix tables to the another set of Q matrix tables", and dependent claim 12, which recites "dynamically changing Q matrix tables of a presently unused set of Q matrix tables of the multiple sets of tables, while still quantizing a sequence of video data using one set of tables or the other set of tables (Appellants: page 10).

In response, as previously discussed before, Wheeler et al discloses dynamically switching (col. 5, lines 25-31) further comprises a table set register (Fig. 7, 692) within the quantizer (644) adapted to control switching of the quantizer from the one set of Q matrix tables to the another set of Q matrix tables (col. 13, lines 28-32) as recited in the claim 4.

Wheeler et al further discloses that CPU is responsible for loading all Q table entries (includes unused set of Q tables), and during encoding (quantizing emphasized) and decoding the CPU loads the Q tables as required (col. 13, lines 28-32). In other words, Wheeler et al dynamically changes (col. 5, lines 25-31)

Q matrix tables of a presently unused set of Q matrix tables of the multiple sets of tables, while still quantizing a sequence of video data using one set of tables or the other set of tables as recited in the claim 12.

For the above reasons, the Wheeler et al's reference does render claims 4 and 12 as being anticipated under 35 U.S.C. 102(e).

CC) The Appellants present yet another argument traversing dependent claim 5, for example, proving a "default quantization matrix table" (Appellants: page 11).

In response, as previously discussed before, Wheeler et al does not specifically disclose having a default quantization matrix table.

However, it is conventionally well known in the art for a video encoder quantizer table to include a default Q matrix table.

Furthermore, Hang et al teaches an apparatus/method for controlling quantization and buffering for digital compression (encoding), comprising a default quantization matrix table (a table of default Q step size values) (abs.).

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing an encoder as taught by Wheeler et al to incorporate the default quantization matrix table as taught by Hang et al's so that at least one table or multiple tables of the set of Q matrix tables comprise default quantization matrix tables pursuant to MPEG standard to set the standard for the levels of image quality (Note; quantization has direct correlation with the image quality).

For the above reason, the Wheeler et al in view of Hang et al's reference do render claim 5 as being unpatentable under 35 U.S.C. 103(a).

For all of the reasons discussed above, it is believed that the rejection should be sustained.

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